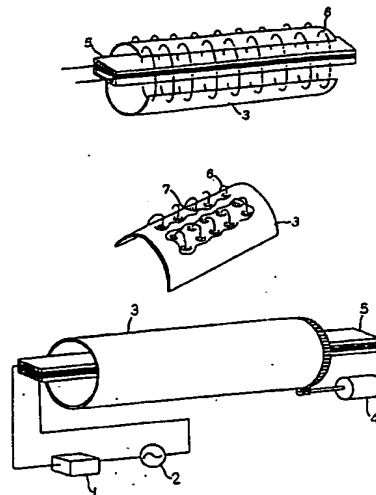


**(54) FIXING DEVICE FOR PRINTING APPARATUS OR THE LIKE**

(11) 2-108541 (A) (43) 20.4.1990 (19) JP  
 (21) Appl. No. 63-262124 (22) 18.10.1988  
 (71) NEC CORP(1) (72) KIYOSHI TAKAHASHI(1)  
 (51) Int. Cl<sup>5</sup>. B41F23/04

**PURPOSE:** To shorten the time required for making a heat roller uniform in temperature by providing a high frequency wave generating circuit, a coil driven by said high frequency generating circuit and a cylindrical heat roller made of magnetic substance and arranged in a magnetic field produced by said coil.

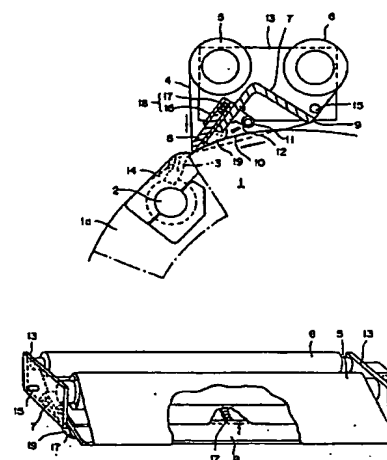
**CONSTITUTION:** A cylindrical heat roller 3 made of magnetic substance is so placed as to be rotatable by a constant speed motor 4. A coil 5 is built in the heat roller 3, and connected to a high frequency wave generating circuit 2. A current controlling circuit 1 is provided so as to prevent a large current from flowing in the coil 5. When a high frequency wave is sent to the coil 5 by the high frequency wave generating circuit 2, a magnetic flux 6 is generated. It is so arranged that the density of magnetic flux on the cylindrical heat roller 3 made of magnetic material is made uniform by elongating the coil 5. When the magnetic flux 6 is generated, an eddy current 7 is generated on the heat roller 3, which generates heat by the resistance of the heat roller 3, thereby effecting fixing. Accordingly, a part of the heat roller in contact with a paper can be heated uniformly in a short time.

**(54) IMPRESSION CYLINDER CLEANING APPARATUS OF OFFSET SHEET-FEED PRESS**

(11) 2-108543 (A) (43) 20.4.1990 (19) JP  
 (21) Appl. No. 63-261395 (22) 19.10.1988  
 (71) DAINIPPON PRINTING CO LTD (72) YOSHIKI NOSAKA(2)  
 (51) Int. Cl<sup>5</sup>. B41F35/06

**PURPOSE:** To positively bring a cleaning cloth into uniform contact with the circular arc surface of an impression cylinder by providing a pressurizing mechanism which elastically presses a blade for pressing said cleaning cloth from the rear surface thereof towards said impression cylinder so that said blade is able to slide on a support body towards said impression cylinder.

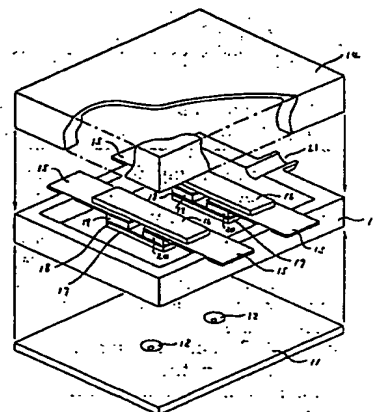
**CONSTITUTION:** A U-shaped guide plate 16 is provided at one end of a mountain-like support body 7 and a blade 8 is accommodated within a groove of the guide plate 16 in a manner slidable by a coil spring 17. This blade 8 is brought into uniform contact with the surface of an impression cylinder by the contraction of the coil spring 17. A cleaning cloth 4 is uniformly brought in linear contact with the impression cylinder surface by the blade 8. The other end of the support body 7 is rendered a guide part 9, whereby the cleaning cloth 4 is turned into a circular shape and brought into contact with the impression cylinder 1. Since a felt pad 19 is provided at the side of the rear surface of the blade, the cleaning cloth 4 although it is pressed by the blade can be more strongly pressed into face-to-face contact with the surface of the impression cylinder. Accordingly, the impression cylinder can be automatically cleaned in a simple manner, thereby having labor and improving productivity.

**(54) INKJET PRINTING HEAD**

(11) 2-108544 (A) (43) 20.4.1990 (19) JP  
 (21) Appl. No. 63-263066 (22) 19.10.1988  
 (71) SEIKO EPSON CORP (72) HARUHIKO KOTO(1)  
 (51) Int. Cl<sup>5</sup>. B41J2/045

**PURPOSE:** To achieve easy manufacture of a printing head by letting the deformation of a movable mechanism section caused upon expansion, contraction or phase change of a member due to the temperature change by heat generation or heat absorption influence the movement of a liquid ink, whereby said ink is discharged.

**CONSTITUTION:** In printing, an ink is supplied from an ink feed hole 21 into containers 13, 14, and an electrode 15 is driven by a complimentary push-pull circuit. When the electrode 5 is made conductive in a positive direction, semiconductors 19, 20 generate heat at respective sides in contact with an electrode 18 by Peltier effect, while absorbing heat at the sides in contact with the electrode 15. Therefore, a polysulfone film 17 thermally expands and a polysulfone film 16 contracts. As a result, the vibrating plate as a whole is bent downwards, whereby the ink is discharged from a nozzle. When the electrode 15 is supplied with a current in a negative direction, the semiconductors at the sides in contact with the electrode 18 absorb heat and they at the sides in contact with the electrode 15 generate heat, and accordingly the vibrating plate is returned almost in a horizontal direction. A printing head repeats power supplying the positive and negative directions alternately in accordance with printing data of every pixel, thereby performing printing. The vibrating plate of the printing head can be thus manufactured in an easy manner, for example, by bonding members each other.

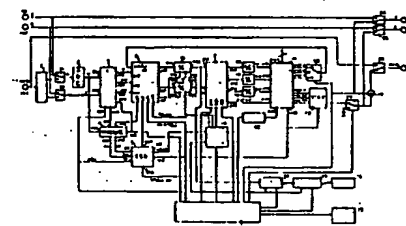
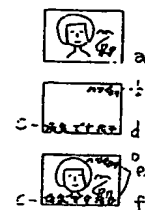


**(54) COLOR VIDEO PRINTER**

(11) 2-92641 (A) (43) 3.4.1990 (19) JP  
 (21) Appl. No. 63-244184 (22) 30.9.1988  
 (71) HITACHI LTD(1) (72) SATORU YOSHIDA(4)  
 (51) Int. Cl<sup>5</sup>. B41J2/00, B41J2/52, H04N9/79

**PURPOSE:** To obtain a printed image without disturbance of an input video signal by employing a common single clock for writing/reading an image memory, and providing an overlay memory separate from a printing image memory as an image memory, and overlay data inserting means at the rear stage of the image memory.

**CONSTITUTION:** If a hand-written character is desired to be overlaid to be printed on an image, a telop is formed, imaged by a video camera, and input from an input terminal 151, 152 or 153. A Y signal decoded by a decoder 3 is clamped by an A/D preprocessor 6, converted by an A/D converter 71, and recorded in an overlay memory in an image memory 8 as ON, OFF signals "0", "1". Then, when the memory is set in a reading state, the content of the memory 8 is D/A converted, and regulated by a regulator 11. On the other hand, the content of the overlay memory and a color signal determined by a color selector 12 are input to an overlay inserting circuit in the regulator 11, a video signal and a color signal are switched to the timing of the signal from the overlay in the overlay inserting circuit to form an overlaid video signal.



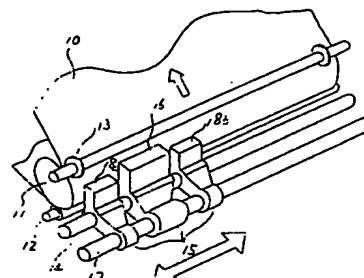
1: Y/c separator, 10: memory controller, 11: system controller, 14: line memory, 15: halftone controller, 16: heat sensitive head, 17: printing mechanism, a: image memory data, b: from Hawaii, c: fine from Hanako, d: overlay memory data, e: overlaid characters, f: printing/monitoring image

**(54) INK JET RECORDER**

(11) 2-92642 (A) (43) 3.4.1990 (19) JP  
 (21) Appl. No. 63-246708 (22) 30.9.1988  
 (71) SEIKO EPSON CORP (72) KENICHI KANBAYASHI  
 (51) Int. Cl<sup>5</sup>. B41J2/01, B41J29/00

**PURPOSE:** To improve fixing strength by providing a thermal head for thermally fixing ink composition after flying and adhering.

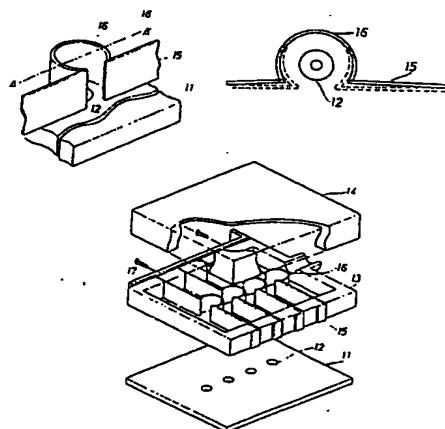
**CONSTITUTION:** An ink jet head 16 has a plurality of nozzles capable of controlling injection of ink droplets independently of the head 16, swept in the axial direction of a platen, and ink droplets are selectively discharged from the nozzles to form an ink image on a recording sheet 10. Thermal heads 18a, 18b having a plurality of heaters capable of controlling dot heating independently follow the head 16, and scanned axially of the platen. In case of unidirectional printing, only the head 18a is heated. In case of bidirectional printing, the head 18a is heated at the time of rightward printing, while the head 18b is heated at the time of leftward printing, and an ink image formed by the head is selectively heated and fixed. Thus, the dots are blurred flatly, the dots are partly resolidified in a state of penetration into fiber near the surface of a recording sheet. Accordingly, fixing strength is satisfactory, scuffing resistance is provided, and high adhesive properties, high printing quality can be obtained.

**(54) INK JET HEAD**

(11) 2-92643 (A) (43) 3.4.1990 (19) JP  
 (21) Appl. No. 63-246705 (22) 30.9.1988  
 (71) SEIKO EPSON CORP (72) FUMIO NAGASAKA  
 (51) Int. Cl<sup>5</sup>. B41J2/045, B41J2/015

**PURPOSE:** To facilitate a constitution, and to print at a high speed by varying a shape by means of thermal expansion of the surface of a wall face member upon heating of a heat generating layer.

**CONSTITUTION:** An annular movable wall 16 of polyethylene is deposited on its outer wall with TaSiO<sub>2</sub>, 2, and coupled with an aluminum-deposited PET film 15 via conductive adhesive. One of the PET films of the wall 16 continues with a common electrode 17, and the other is composed to be applied with an electric signal. When the wall 16 is electrified, the temperature of the deposited TaSiO<sub>2</sub> layer starts rising on the outer wall of the part 16, the polyethylene of the part 16 causes temperature difference between the outer wall and the inner wall, a bending stress acts between the outer wall and the inner wall by means of thermal expansion to alter the shape of the movable wall. When the electrification is finished, the shape of the wall is recovered to the original shape. The part surrounded by a cylindrical shape is caused by a volumetric change in this series of operations, and the variation is discharged from a nozzle 12.



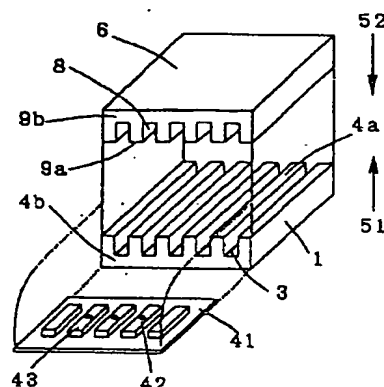
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**(54) LIQUID-DROP JET APPARATUS**

(11) 4-353456 (A) (43) 8.12.1992 (19) JP  
 (21) Appl. No. 3-127489 (22) 30.5.1991  
 (71) BROTHER IND LTD (72) HIROTO SUGAWARA(2)  
 (51) Int. Cl.<sup>5</sup> B41J2/045, B41J2/055

**PURPOSE:** To provide the apparatus enhanced in yield in a manufacturing process.

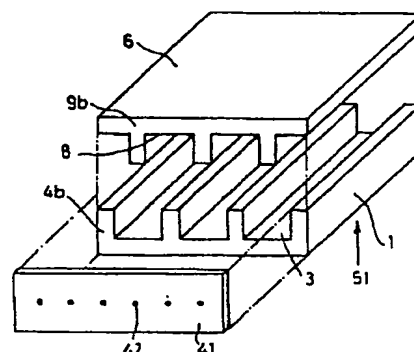
**CONSTITUTION:** In a liquid-drop jet apparatus equipped with a plurality of jet devices injecting the ink in ink passages by changing the volumes of the ink passages using a piezoelectric transducer, the ink flow passages are formed by a plurality of the grooves provided on a piezoelectric transducer 1 and, since the plate having a plurality of ink jet orifices engaged with the piezoelectric transducer 1 has protruding parts on its surface engaged with the piezoelectric transducer 1 at the same interval as the ink passages, the alignment of the piezoelectric transducer 1 and the orifice plate is easy and the liquid-drop jet apparatus improved in the yield in a manufacturing method can be provided.

**(54) LIQUID-DROP JET APPARATUS**

(11) 4-353457 (A) (43) 8.12.1992 (19) JP  
 (21) Appl. No. 3-129437 (22) 31.5.1991  
 (71) BROTHER IND LTD (72) HIROTO SUGAWARA(2)  
 (51) Int. Cl.<sup>5</sup> B41J2/045, B41J2/055

**PURPOSE:** To provide the apparatus facilitated in the groove processing of a piezoelectric transducer and reduced in processing cost.

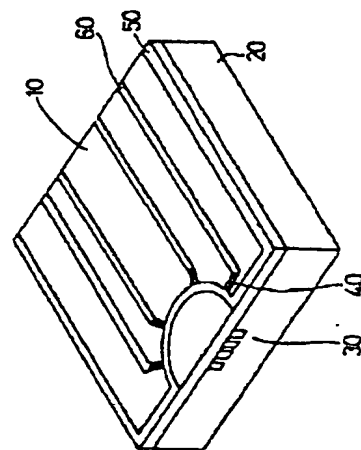
**CONSTITUTION:** In a liquid-drop jet apparatus equipped with a plurality of jet devices injecting the ink in ink passages by changing the volumes of the ink passages using a piezoelectric transducer, two piezoelectric ceramics plates each having grooves each wider than each of the ink passages are bonded or one piezoelectric ceramics plate and a non-piezoelectric material are bonded. When the interval between the adjacent ink passages is reduced in order to enhance the degree of integration of ink droplets, the groove processing of piezoelectric ceramics becomes easy as compared with a conventional method and processing cost can be reduced.

**(54) INK JET HEAD**

(11) 4-353458 (A) (43) 8.12.1992 (19) JP  
 (21) Appl. No. 3-129438 (22) 31.5.1991  
 (71) BROTHER IND LTD (72) YOSHINORI BESSHO  
 (51) Int. Cl.<sup>5</sup> B41J2/045, B41J2/055

**PURPOSE:** To provide a low power consumption type ink jet head emitting a very small amount of ink to record the same on recording paper, extremely easy to manufacture and improved in energy efficiency.

**CONSTITUTION:** A thin insulator low in heat conductivity and having thickness of about 50 $\mu$ m is used as the lid plate of ink chambers and a plurality of thin film resistors are provided on the upper surface thereof. By bonding the lid plate to a base substrate having ink passages and a plurality of ink chambers, an ink jet head is constituted. When a current is supplied to the thin film resistors, the lid plate is partially curved by thermal elastic bending effect to suck ink. When a current is cut off, the lid plate shrinks rapidly to emit the ink to perform recording. By repeating this operation, a character is printed.



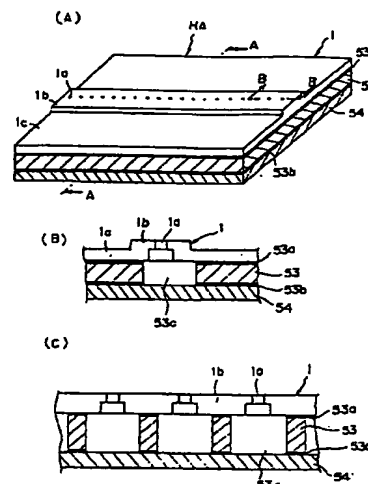
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**(54) INK JET PRINTER HEAD**

(11) 6-91864 (A) (43) 5.4.1994 (19) JP  
 (21) Appl. No. 4-240383 (22) 9.9.1992  
 (71) BROTHER IND LTD (72) MANABU KATO  
 (51) Int. Cl.<sup>5</sup>. B41J2/045, B41J2/055

**PURPOSE:** To obtain an ink jet printer head preventing a positional shift between formed plates, a leakage of ink, and the like.

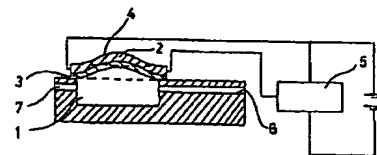
**CONSTITUTION:** In an ink jet printer head HA provided with an orifice forming part with ink jetting orifices 1a juxtaposed; a membrane plate 1c provided with ink supply paths for supplying ink to the orifices 1a; a laminate 53 overlapped on the membrane plate 1c and provided with ink chambers for supplying ink to the ink supply paths; and a piezoelectric element 54 overlapped on the laminate 53 to apply a pressure to the ink chambers, the orifice forming part 1a and the membrane plate 1c are integrally molded.

**(54) INK JET HEAD**

(11) 6-91865 (A) (43) 5.4.1994 (19) JP  
 (21) Appl. No. 4-247679 (22) 17.9.1992  
 (71) SEIKOSHA CO LTD (72) YOSHIHIRO KONDO  
 (51) Int. Cl.<sup>5</sup>. B41J2/045, B41J2/055

**PURPOSE:** To obtain an ink jet head having a shape memory alloy with an improved reliability, a reduced size, and an enhanced density.

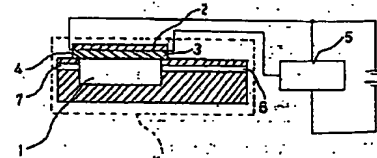
**CONSTITUTION:** A pressurizing vibration body 4 formed by securely laminating a shape memory alloy 2 on a shape regulating body 3 is regulated in shape to be deflected upward by the shape regulating body 3. By heating the pressurizing vibration body 4 by a drive circuit 5, the shape memory alloy 2 reaches a transformation temperature and changes in shape to be deflected downward, thus reducing a volume of an ink chamber 1 to pressurize ink liquid inside to jet the ink liquid from a nozzle 7. By interrupting the heating by the drive means, the pressurizing vibration body 4 is regulated into the unheated shape by the shape regulating body 3. By repeating the aforesaid operation, printing is conducted.

**(54) INK JET HEAD**

(11) 6-91866 (A) (43) 5.4.1994 (19) JP  
 (21) Appl. No. 4-247680 (22) 17.9.1992  
 (71) SEIKOSHA CO LTD (72) YOSHIHIRO KONDO  
 (51) Int. Cl.<sup>5</sup>. B41J2/045, B41J2/055

**PURPOSE:** To obtain an ink jet head having a shape memory alloy with an improved reliability, a reduced size, and an enhanced density.

**CONSTITUTION:** A pressurizing vibration body 4 is heated by a drive circuit 5. In this manner, firstly, a first shape memory alloy 2 reaches a transformation temperature and changes into a matrix phase, thus expanding a volume of an ink chamber 1. Next, a second shape memory alloy 3 reaches a transformation temperature and changes into a matrix phase, thus reducing a volume of the ink chamber 1. A volume change from the volume of the ink chamber 1 at the first transformation temperature to the volume of the ink chamber 1 at the next transformation temperature results in ink liquid being pressurized and jetted out of a nozzle 7 as an ink liquid drop.

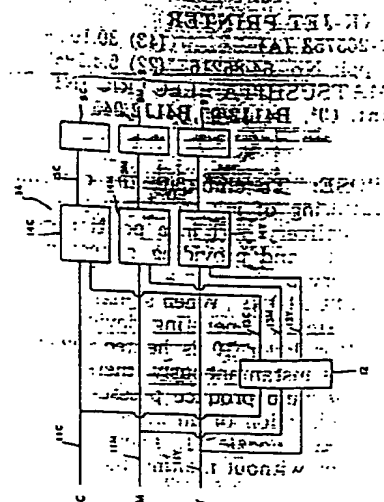


## (54) IMAGE RECORDING APPARATUS

(11) 2-265749 (A) (43) 30.10.1990 (19) JP  
 (21) Appl. No. 64-86878 (22) 7.4.1989  
 (71) CANON INC (72) TOSHIMITSU DANZUKA(1)  
 (51) Int. Cl.<sup>3</sup> B41J2/01, B41J2/075

**PURPOSE:** To make it possible to obtain always fine image records even in an image recording apparatus wherein recording is conducted by superposing recording agents by implementing operation based on image signals which specify driving conditions of delivery energy generating elements corresponding to each delivery port of recording heads in a region of high gray level, and by making smaller the image signals to specify driving conditions of the elements in response to the result of the operation.

**CONSTITUTION:** An operation unit 12 is an operation processing unit, wherein operation is applied to image signals 11C, 11M, 11Y, whereby signals 13C, 13M, 13Y are outputted therefrom as a result of the operation. And image signal correction unit 14C, 14M, 14Y correct input image signals 11C, 11M, 11Y respectively in response to the signals 13C, 13M, 13Y. In the case of cyanogen, for example, correction of the signal 11C in the input image signal correction unit 14 is made by converting the signal 11C to signal 15C using a look-up table. In the case of a binary printer, wherein input image signal is small, when the number of recorded dots per area is small, no conversion is made and when input image signal becomes larger and number of recorded dots increases in the binary printer, output signal is kept at lower values so that quantities of ink recorded in the boundary area decrease and hence black lines in the region of high gray level are reduced.



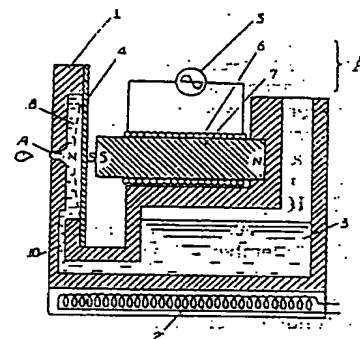
9C.9M.9Y: head

## (54) INK-JET HEAD

(11) 2-265751 (A) (43) 30.10.1990 (19) JP  
 (21) Appl. No. 64-86202 (22) 5.4.1989  
 (71) MATSUSHITA ELECTRIC IND CO LTD (72) SEIJI YAMAMORI(4)  
 (51) Int. Cl.<sup>3</sup> B41J2/045, B41J2/015

**PURPOSE:** To prevent the deterioration of transducers due to heat by providing electromagnetic transducers comprising permanent magnet and electromagnet in stead of piezo-electric transducers.

**CONSTITUTION:** At first, a heating means 2 is energized to generate heat so that a head structure member is heated to melt solid ink 3 therein, whereby the melted ink is fed into an ink chamber 8 through an ink passage 10 so that the chamber 8 is filled therewith. After a predetermined period of time, an ink-jet head 1 is kept at a constant temperature by the action of a temperature control circuit, following which a printer starts printing action, while image signal current is applied to a coil 5. The S-pole of a diaphragm 4 and S-pole of a magnetic core 7 repel each other, so that the diaphragm 4 is curved toward the ink chamber 8, whereby an abrupt pressure rise is caused in the chamber 8 with the result that droplets of ink are delivered from an ink nozzle 9. When electric power is put off, the diaphragm 4 restores its original shape, while the ink 3 is supplied to the chamber 8 through the ink passage 10.



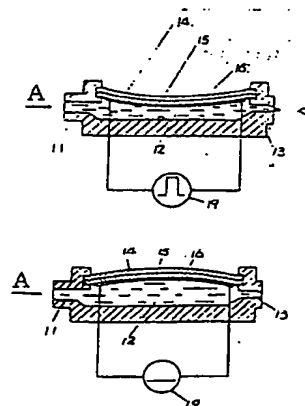
5: signal. A: electromagnet

## (54) INK-JET RECORDING HEAD

(11) 2-265752 (A) (43) 30.10.1990 (19) JP  
 (21) Appl. No. 64-86205 (22) 5.4.1989  
 (71) MATSUSHITA ELECTRIC IND CO LTD (72) HAJIME ODA(4)  
 (51) Int. Cl.<sup>3</sup> B41J2/045, B41J2/05

**PURPOSE:** To dispose a large number of nozzles closely to each other to enable displacement elements for generating pressure of ink to act under low drive voltage by using two shape memory alloy displacement elements which are superposed on each other as displacement elements for generating pressure of ink and providing also a heating or cooling means.

**CONSTITUTION:** When a signal 19 is applied to a heating element 16, a shape memory alloy displacement elements 15 is first heated so as to be displaced toward the side of a pressure chamber 12, whereby the pressure of ink in the chamber 12 rises, thereby causing the ink to be projected in the form of droplets from an ink delivery port 13. And when the signal is cut off, the element 15 is cooled; however, a shape memory alloy displacement element 14 situated outside the element 15 is caused to warp in a direction opposite to the chamber 12 because of its retarded cooling. As a result, the elements restore their original parallel form or conversely they warp slightly outwardly, so that ink is supplied into the chamber 12 from an ink supply port 11.



A: ink

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